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Research examples are reviewed as illustrative of sound procedure and recommended technique. Basic assumptions and procedural safeguards are suggested with respect to design, a variety of procedures, and evaluation of data. Specific guidelines for engaging in reaearch as well as proper interpretation of completed research are listed.

Research arises out of felt needs on the part of some group or individual. It can be directed toward finding the answers to specific immediate questions on the part of a single teacher, or it can be a long term, comprehensive investigation involving the whole school district. Research on the academically talented can be in the areas of expanded definition, creativity, nonintellectual factors of intelligence, programming, differential curriculum, guidance, teaching, or administrative changes. Since it is vital that school research should not outrun its public, it is essential that there be increased interest in research, participation on the part of school personnel, and increased and multiplied cooperation and interaction between the public, school personnel, and research agencies.

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RESEARCH

on the academically talented student

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RESEARCH
on the Academically Talented Student

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FOREWORD

The purpose of this report is to provide assistance to school personnel who are responsible for research on the education of academically talented youth. This publication is not primarily a review of research, although research is reviewed as illustrative of sound procedure and recommended technique. Basic assumptions and procedural safeguards are suggested with respect to design, a variety of procedure, and evaluation of data.

The conference participants, chosen from the membership of the American Educational Research Association, the American Psychological Association, and the Association for Supervision and Curriculum Development, met for three days under the chairmanship of Kenneth Anderson. Suggestions for this publication, developed at that time, served as the basis for a first-draft working paper, prepared by Dean Anderson. After review by conference members, the manuscript was again reviewed by the editing committee.

Special appreciation is due Abraham Tannenbaum, Yeshiva University, for his work on the manuscript; Frank Hubbard, Assistant Executive Secretary for Information Services, NEA, whose guidance and assistance was of the greatest value; and, especially, John Gowan, San Fernando Valley State College, whose contribution was most significant.

This opportunity to share resources with the cooperating organizations interested in more effective research in education has, indeed, been greatly appreciated, for it is believed that through such joint efforts the quality of educational research will be improved. We are grateful to the Carnegie Corporation of New York for making this possible.

LAWRENCE G. DERTHICK
Assistant Executive Secretary
for Educational Services

CONFERENCE PARTICIPANTS

May 21-23, 1959

Conference . . . Research on the Academically Talented Student

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THE PROBLEM OF DEFINITION

This report is unique. It is a group effort to bring together a number of ideas relevant to research dealing with the academically talented student. The experts called together for this conference found themselves struggling to find acceptable, mutually understood terminology. For one thing, there was no complete agreement as to which students deserved the designation "academically talented." Some of the expressed differences are reflected in the manuscripts which summarize the consensus of the group.

In order to help the reader with this material, a few suggestions may be necessary. Since the several sections were prepared by small groups working semi-independently, the reader should ask himself from time to time whether the students being considered in any single section are precisely the same as those of the previous section. For example, at one point the text may be focused upon high-school students who are known to have high intelligence but who are not showing high academic achievement. At another point the discussion may be centered upon those with superior but not outstanding intelligence who have high scholastic standing. In the first case, the term "academically talented" is being applied to those with high learning potential as shown by measures of intelligence; in the other case, the term is being applied to those who have demonstrated their ability to get superior marks and other evidence of superior achievement.

The word "talent" itself may be used in a number of different ways. Some research students use it to mean superior ability in performing a highly skilled act, such as playing a musical instrument. Others use the term only for those whose superior conceptualization ability equips them to acquire and to manipulate abstract concepts. Still others use the term "talent" in connection with almost any kind of superiority that has been demonstrated or, in a larger sense, with any superior potential upon which society may draw.

The terms "gifted" and "academically talented" are often used synonymously. Historically, the term "gifted" was applied to those who were mentally superior (as shown by intelligence tests) or to those who had an exceptionally well-developed talent. Today, the term "gifted" tends to be synonymous with "high achievers" or even with those who are both highly intelligent in potential and highly successful in achievement. Again, the reader is advised to be aware of the apparent meaning of these labels as they are used at specific points in the text.

In current literature the term "mentally superior" is often applied to a person with a high IQ. The experienced investigator, on the other hand, recognizes that the IQ is a derived numerical score, based on performance on a test which purports to measure ease of book learning. The IQ is a symptom of a child's learning potential, but it is neither a complete nor an entirely reliable measure of the child's true potential. When educational research materials shift between the terms "high IQ" and "mental superiority," the reader may be led to think of the two as synonymous. Usually, a careful reading of the text indicates what the author intended in each case.

The reader may often find himself asking: "How high is a high IQ?" The practical application has to do with the cut-off point in an IQ distribution for the purpose of setting off the "academically talented" from those of lesser ability. No flat rule can be offered because of differences among intelligence tests. When one research investigator defines the "talented" as those with IQ's above 130, and another draws the line at 160, the conclusions drawn obviously will be based upon different populations. Recommendations for research might be made which are useful for those with IQ's of 160 and above, but unsatisfactory when applied to the larger population with IQ's above 130.

Somewhat better success is obtained when the line is drawn on a percentage basis. For example, the academically talented may be said to be the top 5, 10, or 15 percent of an IQ distribution or of a distribution of scholastic achievement. Earlier conferences under NEA auspices recommended that the Academically Talented Project focus on the upper 15 to 20 percent in academic achievement, or, more precisely, on the population one standard deviation above the mean. Participants in these early conferences were inclined to speak of the upper 20 percent of all students in secondary schools. In the research conference, from which this report emerged, it was observed that in local situations the center of attention might be upon the upper 20 percent of an individual school. This limited population group, of course, might exhibit characteristics that would differ from those of the *total* secondary-school population. Again, the reader is warned of statements in this publication which may apply to only one of these population groups.

Most readers will be aware of the problem of describing the academically talented (or, for that matter, any group or individual). Most objects (human and still life) have many facets, but they can be described only by giving attention to one facet at a time. Despite research efforts to describe the academically talented, our progress tends to limit us to terms that are related to intelligence. We are just beginning to compile evidence dealing with achievement in specific academic areas, behavior patterns in various social situations, and many other aspects that will round out our image of the academically talented. The current attention given to intelligence as a means of identifying the academically talented does not mean that they can be described only in this way and that only the intellectual aspects of the talented are of concern to the student of research.

We do not wish to discourage the reader from a complete and enthusiastic reading of the text. Our first purpose in describing the hazards of terminology has been to warn readers to keep in mind that, despite careful editing of the manuscript, a given word may have been used in two or more meanings. A second purpose in these warnings has been to improve communication with the reader and, in turn, his possible later communication with co-workers. Perhaps the best safeguard is to use labels and terms with caution and with recognition of their limitations. There is so much terminological turbulence now—some inexcusable and some understandable in a new, growing field—that all readers should be sensitive to the importance of precise meanings in research studies and discussions related to the academically talented students.

CHAPTER I

Introduction to Research

All research rests upon certain assumptions and is more likely to be soundly based and planned if these assumptions are clearly stated in advance. Assumptions clarify the frame of reference from which the individual perceives a situation. An assumption is not itself an empirical fact but is rather a generalization which is believed to be true and is taken as a point of departure.

ASSUMPTIONS UNDERLYING RESEARCH

The First Assumption

Our first assumption is that there exists an identifiable group of students who may appropriately be called the academically talented.

Various researchers may properly disagree on the specific criteria for identification. Such disagreement reflects, in part, basic and persistent difficulties in measuring human potential, as well as divergent beliefs concerning education for the academically talented. Nevertheless, educators and psychologists should state precisely the criteria they use for identifying the academically talented, so as to make known who is being studied and how to interpret eventual findings.

A Second Assumption

The second assumption is that the objectives of instructional programs for the academically talented can be conceptualized. Whether the objectives are stated in terms of knowledge of subject matter, intellectual abilities and skills, psychomotor abilities, work methods, attitudes, values, creativity, personality integration, changes in behavior, or in any other terms, the development of instructional programs and of related research designs requires that the goals be clearly delineated.

We believe that a primary aim of the secondary schools is to provide a "liberal education." Such an objective implies continuing appraisal of those factors which free the individual from the limitations of ignorance, prejudice, and provincialism, and continuing study of how the individual frees himself. It does not imply that all students can ever be equally free or that an identical number of semesters or years of certain required subjects will have the same effect upon all students in achieving a "liberal education."

In this context we accept certain specific aims of secondary education. All students should be assisted in developing whatever potentialities they may possess, including their academic, artistic, social, and psychomotor talents. All students should be helped to appreciate their common heritage and their civic rights and responsibilities. They should gain respect for self, develop a reasonable measure of self-discipline, and acquire efficient study and work habits. Students should be guided, as necessary, to maintain the requisite mental and physical health to achieve reasonably close to their expectations. They should be taught the ethical values essential for civilized living—"reverence for life," in the words of Schweitzer. Academically talented students, particularly, will question the accuracy and completeness of present knowledge. They need to be encouraged to try out novel ideas and inventions that have applications to their individual development and also to larger problems of group life.

We believe also that equality of education does not mean identical education for all but rather that education must be related to the varied capabilities of the individuals receiving it. Special attention to students with extraordinary promise is necessary because there is no basis for the belief that "talent will out" regardless of how it is nurtured. Indeed, only with special attention can able students be expected to develop maximally—a goal not only central to our American values but of increasing importance at a time when the nation's richest human resources are desperately needed.

A Third Assumption

A third assumption is that curriculum and instruction can be designed to achieve the posited objectives. If we were doubtful that this could be done, there would be no point in identifying the academically talented, in developing objectives of instruction, or in conducting research to ascertain which of the many possible arrangements might produce better results. Considerable disagreement may exist among classroom teachers and principals as to what should be done for the academically talented with regard to required subjects, number and length of instructional periods, homework, numbers of students per class, characteristics of teachers, and other important elements in school procedure. When these disagreements arise within a school or school system, they must somehow be resolved. The third assumption implies that questions regarding curriculum and instruction must be settled in order for the academically talented to receive effective education and in order to carry on related research.

In this connection, we have no doubt that the progress of cultural development depends in large part upon excellent educational provisions for the academically talented. Maximal development of the full potentialities of talented individuals is essential to full development of the culture, and cultural vitality is dependent upon both powerful individuality and interactions within the culture itself.

High-quality education of the talented group is fully consistent with effective education for all and in no way inimical to it. Thus, in developing educational programs for the talented and in conducting research as a basis for improvement of programs, it is important to consider all students. No one group of students is a society unto itself; no one group of students, including the academically talented, must gain educational advantages at the expense of any other group.

Appropriately differentiated education for the talented, as well as research related thereto, should contribute positively to the improvement of education of all students. For example, it is impractical, if not impossible, to identify the talented through a comprehensive testing program without also identifying abilities of the entire student body. It is also impractical, if not impossible, to devise appropriate content or methodology of instruction for the academically talented without also considering what might be excellent for students of lower abilities or different interests.

A Fourth Assumption

A fourth assumption is that programs for the talented and for others should be based upon evidence and that part of this evidence must come from good research. Good research can test the effectiveness of new programs and establish principles which will suggest new procedures for educating the talented as well as others. Evidence on educational methods is not the only evidence needed. We need to know far more than we do now about motivation, aptitudes and their development, and the social forces which encourage youth to high achievement or discourage them from it.

Empirical evidence is an important step on the road toward truth. Such evidence will be forthcoming only if: (a) the purposes of a research study are couched in terms of sound learning objectives; (b) school personnel are made a really working part of the research team and acquire some psychological ownership of the research process; and (c) persons involved in the research process are well grounded in academic fields and are sophisticated in the application of research and statistical methods to problems in the educational field.

A Fifth Assumption

A fifth assumption is that suitable research arrangements in schools and laboratories, and appropriate tools and techniques of measurement and evaluation, can be developed for conducting research on the academically talented.

Students, teachers, and guidance workers or school psychologists are closely engaged with one another in the processes of education and decision making. These persons must play a vital role in research as well as in the educational process. Research specialists must somehow arrange to work with them and also with central and building administrators. Preferably, significant research problems, both theoretical and practical, are identified and agreed upon by all the persons involved, including the classroom teachers. Through similar cooperation, the methods and procedures would also be identified.

At this point in research, conflicts often arise because the information itself or the procedure for obtaining it presents practical school problems, such as difficulties in finding time for data gathering, opposition from parents, unfavorable student attitudes, and the like. Research workers are sometimes inflexible in their demands for specific procedures, tests, or types of information. School administrators, classroom teachers, or pressure groups in the community can be equally inflexible.

A school system in which the academically talented have been in "wide ability range" sections for years may suddenly shift to special classes for all the academically talented in all subjects at all grade levels. This kind of abrupt change often prevents the acquisition of important data for rigorous comparisons between old and new grouping policies. The researcher who accepts as useful only highly controlled experimentation cannot comfortably help such a school system evaluate the possible effects of special classes since there is no possibility for securing control groups.

There is a need for arrangements that provide the possibility of securing information to make wise decisions. These arrangements can best be made when school and research personnel plan their studies cooperatively. Generally, school people are not familiar with research design, while some experts in design are quite unfamiliar with the requirements of ongoing educative processes in the school. Therefore, cooperation between the two is necessary if research is to develop smoothly and effectively.

A Sixth Assumption

A sixth assumption is that important decisions about desirable education for the academically talented must be based on philosophical considerations and value judgments which result from rational thought. For example, deciding how much instruction the academically talented should have in the fine and applied arts and deciding the proper balance between instruction in science and instruction in English are questions involving value judgments and philosophical considerations rather than controlled experimentation or other types of research. Though these decisions are based on educational values, the processes by which a school might arrive at them often involve research techniques and the use of reliable data.

Out of research evidence and philosophical assumptions should emerge a theory or theories of education of the academically talented which will provide the basis for articulated programs from nursery school through college and university. In turn, the related problems and hypotheses will provide directions for further research.

ESSENTIALS OF SOUND RESEARCH

People do research to satisfy their curiosity about things. In some instances this curiosity is expressed in the form of questions. The more clearly and the more precisely the questions are stated, the greater is the chance of getting helpful or meaningful answers. One reason why there is often no clear answer to an initial question is that the question is poorly formulated at the beginning. Note the difference between these two questions:

1. What do we know about the reading of able students?
2. How does the amount and kind of reading of able students compare with that of other students over a specified period of time?

Some researchers may decide to state their curiosity in a more restrained or statistically explorable way, using a null hypothesis form of statement. But whether the problem is stated in question or in hypothesis form, the terms and criteria must be clearly defined in a manner that makes possible the later analysis of objective data. Methods of data collection need to be standardized. Precautions against "halo effect" must be taken. Pilot studies may often be useful in pointing up areas that need special attention.

Where studies require the use of control groups, particular care should be taken to see that only the variable under study is allowed to differ between the two groups. Failure to account for or to control motivation, status, personality, and age factors may wreak havoc with an otherwise well-designed study. Where several variables are involved at the same time, multivariate analysis may be called for. In such situations especially, school personnel lacking research training should avail themselves of a technical consultant whose help on research design can often save a great deal of time, trouble, and money.

For the school district engaging in research on the able student, the following specific guidelines are suggested:

1. The research should take place in a realistic school setting. Any study which involves a major departure from standard practice or a major dislocation of student life and activity needs to be considered in terms of its risks as well as its possible advantages.

2. The "Hawthorne effect" of heightened morale which comes about through being singled out for an experimental group should always be taken into consideration in planning research. If possible, the control groups should have similar motivational stimulation.

3. Longitudinal research is much more effective than cross-sectional research if the district can afford to wait for the results. Research policy should involve both kinds of study. Cross-sectional research done on succeeding classes may uncover useful knowledge about gradual trends, which would otherwise be unknown.

4. The multiplicity of objectives pursued by the educator of academically talented students must be borne in mind even though the research contemplated appears to be pertinent to only one of those goals. For example, acceleration in achievement in mathematics may well be the primary concern of a researcher, but attendant behavior modifications (which are often positive) in other subject matter areas, social adjustment, or emotional health should not be ignored.

5. The problem of generalizing from results in one school should be faced. Schools in nearby communities may have differing philosophies, traditions, and atmospheres. Practices found highly effective with able rural youth may not be nearly so effective in a large urban high school.

6. Research is not a "quondam thing." Not only do new problems constantly arise, but each study itself

inevitably raises a number of questions for every one it answers. The success that industry has had with ongoing research should inspire school districts to undertake continuing research and to budget for it.

7. The nature of research instruments determines, to a great extent, the nature of the conclusions which can be drawn. One temptation is to study only that sort of information which is easily obtainable; another is to construct *ad hoc* devices because others seem inappropriate. Too few of the latter are tested for clarity, reliability, and validity.

8. Research on able students can capitalize on the reactions of these students, since they are both bright and verbal. Their comments on methods in exploratory studies can yield many clues of great help in refining procedure. Their post-mortem observations can also suggest additional insights.

9. In many studies findings are usually stated in terms of averages, or in difference of group means. While such results are generally appropriate, certain individual results, in the case of able students, may be so much higher than the group average that valuable information is lost if these are ignored. An academically talented group is not by definition a homogeneous group. Tremendous differences may exist between the highest and the lowest members of such a group. Consequently, subgroup results should be encouraged.

10. Since replication of experiments with school populations in other communities is a necessity for generalization of results, it is important that research be planned and executed so as to make comparable studies possible and easy. Definition of groups, clarity of objectives and procedure, description of measuring devices, and similar procedures are all useful in assisting others who may wish to perform the experiment in a different setting.

11. A researcher working with able students is obligated to show evidence of a broad and deep sensitivity to the ethics surrounding his work. To the teachers,

without whom his inquiry may not be possible, he owes the respect due a fellow worker, as full an initial explanation as the research design warrants, and a final report of the outcome of the endeavor. The researcher must also accord full respect to the pupils whom the inquiry involves. He should seek to communicate an understanding of the aims, outcomes, and limitations of the project to the parents and adults of the community, as well as to prevent and allay any feelings of personal or group threat, or possible uncomfortable implication of outcomes.

More specifically, safeguards should be provided so that the teacher and students in the control groups are not made insecure in their roles and do not acquire attitudes or work habits which would violate the important comparison function of their group. The researcher should also guard against contributing to unwarranted degrees of confidence in the accuracy of his measuring instruments, as well as doing everything in his power to avoid creating false hopes in the minds of pupils or parents about the possible outcome of his studies.

Assuming that one wishes to institute procedures which some other researcher has found effective with academically talented students, here are some of the questions that must be answered in order to proceed with reasonable confidence.

1. Did the researcher clearly state the purposes of his study? Are they the same as yours?
2. Were the desired learnings specifically stated? Are they the same learnings you wish to find?
3. Did his students learn in an atmosphere of teacher morale similar to that which exists among your teachers?
4. Are your administrators and supervisors as cooperative as he reported his to be?
5. Do the academically talented students in your group come from similar socioeconomic backgrounds as did his students?

6. Are the two groups of able students comparable in other general background and psychological characteristics?
7. To what extent was the prior educational treatment of his youngsters comparable to yours?
8. Did he describe in sufficient detail just what he did in the way of enrichment, guidance, acceleration, and motivational and marking procedures, so that you can do the same?
9. Can you duplicate other aspects of his procedures, such as classroom atmosphere, concept development, role playing, and extra use of library or laboratory facilities?
10. Did the researcher spell out in detail the criteria he used for selection, methods of judgments, etc.?
11. Do you yourself know the size of the measurement error which can be tolerated within comparable test descriptions of the students?
12. Were his instruments validated with respect to his teaching goals, and are they appropriate with respect to yours?
13. If his study involved the assessment of attitudes and social adjustment, was his social philosophy stated, and was it appropriate to your situation? Did he have the requisite tools to measure changes in these areas?
14. Did the researcher overgeneralize his data? Were his results appropriate to all students, to all well-motivated students, as well as to all the able? Were they appropriate to just a subgroup of the academically talented?

RESEARCH IN ACTION

Research arises out of felt needs on the part of some group or individual. These needs may be oriented logically in the desire to test experimental procedure, or they may be involved with status or other personal values, such as the need to get a doctor's degree. In the school setting, research-oriented procedure may involve nothing more than an awareness that, prior to change, consideration should be given to the possible results of change. Research can be directed toward finding the answers to specific immediate questions on the part of a single teacher, or it can be a long-term, comprehensive investigation involving the whole school district. It can be undertaken by college or university personnel with an emphasis on the abstract and theoretical, by federal or state agencies with emphasis on the general and statistical, by foundations and school districts, generally with more practical objectives, and, finally, by individual teachers or educators with various goals in mind.

Research, then, may have many purposes; it may have many rationales; it may range from the highly theoretical to the very practical; and it may be addressed to many audiences. It is obvious that these variables will in some measure affect the conduct, methods, findings, and communication of results. It is important to emphasize the many and various activities subsumed under the single word "research." In view of this fact, some of the activities of research will be discussed in order.

Planning School-Initiated Research

1. There should be an initial survey of the literature in the area of concern to locate what is already known, to uncover suitable measuring devices, and to secure guidelines for research design and procedure. The following publications, published serially, are aids in discovering such information:

Encyclopedia of Educational Research. Macmillan Co., 60 Fifth Avenue, New York 11, N.Y.

Education Index. H. W. Wilson Co., 950 University Avenue, New York 52, N.Y.

Review of Educational Research. American Educational Research Association, National Education Association, 1201 16th Street, N.W., Washington 6, D.C.

Psychological Abstracts. American Psychological Association, 1333 16th Street, N.W., Washington 6, D.C.

Child Development Abstracts and Bibliography. Society for Research in Child Development, Purdue University, Lafayette, Ind.

Dissertation Abstracts. University Microfilms, Ann Arbor, Mich.

Masters Theses in Education. Iowa State Teachers College, Cedar Falls, Iowa

Mental Measurements Yearbook. (O.K. Buros, editor.) The Gryphon Press, Highland Park, N.J.

Bibliography of Writings on Education of Gifted Children. California Council on Educational Research, 1705 Murchison Drive, Burlingame, Calif.

2. It is essential to formulate clearly the main question to be answered, plus various subissues. Generally such formulations are the result of a continuing process of discussion and development.

3. Ideas can develop more clearly through consultations with experts in educational research.

4. The establishment of the experimental design will involve the following essential elements: (a) selection and use of experimental and control groups; (b) control of such extraneous variables as age, sex, socioeconomic status, ethnic background, prior education, community background, etc.; (c) provision for the major statistical procedures and methods of data collection (since the former are in some respects determined by the latter); and (d) selection and validation of necessary measurement instruments.

5. When the experimental plan is fully perfected, both groups can be given the same initial measurement, at approximately the same time and under approximately

the same circumstances, and a satisfactory system for handling and preserving records can then be put into operation.

6. The experimental conditions may then be applied to the experimental group, and the control group will go along under its usual pre-existing conditions.

7. At the conclusion of the experimental period, reassessment of both groups will take place.

8. When the data are in, the statistical analysis takes place, and conclusions at stated confidence levels are drawn as to the effectiveness of the procedures.

Teacher-Originated Research

With the ability and training represented by the more capable classroom teachers of today, it is to be expected that many questions about able students and their instruction will arise, together with the desire to answer these questions at the grass-roots level. Such problems ordinarily deal with instructional techniques and materials, criteria for and methods of grouping, or the behavior, characteristics, identification, motivation, and guidance of academically talented students.

While the research of the individual teacher will, in general, resemble the pattern outlined previously, it is likely to be more action-oriented, more specific and practical, more informal and heuristic, and of more concern and moment to the teacher. Additional steps in research procedure might involve presentation of the problem to the appropriate administrative officer for suggestions, information, and assistance, followed by consultation with those colleagues who are similarly interested and might wish to join in cooperative endeavor.

Administrators can help greatly by not hamstringing these individual efforts with red tape and by recognizing the growth value they often have for those who undertake them. The inclusion of local college personnel or community figures through the PTA can often result in such research having more acceptance or value than it otherwise would have. It is especially important that research results be communicated.

Changes Caused by Community Pressures

When the impetus for changes in organization or in program originates, not within the professional staff, but in the community, it is often impossible to plan long-range research with appropriate design. In such instances, it is important that the school executive in charge of the change become a consumer of research in order to guide his decisions. His activities in this capacity may include conducting *ad hoc* procedures such as small-scale research, pilot studies, immediate surveys, or specific inquiries in selected, similar communities. The reactions of gifted students themselves should not be overlooked, as they constitute a most intelligent clientele who are usually highly verbal. In those cases where pretesting is impossible, there may be data on hand in the school files which can be used in place of pretest information. It may then be possible to plan a continuing "follow-back" study, which may be used as the basis for reassessment of the program. Planning, then, should involve built-in evaluation procedures.

RESEARCH ORGANIZATIONS AND PROJECTS

Brief descriptions of the various organizations and projects concerned with research on the academically talented student follow.

1. *The National Education Association Project on the Academically Talented Student, 1201 Sixteenth Street, N.W., Washington 6, D.C., C. E. Bish, Director.* Funded by the Carnegie Foundation in 1957, this major project

has sponsored several national conferences and published a series of booklets on various phases of the education of the academically talented student. This publication is one of the series. These and other project activities are noted by Bish (1959).

2. *The Horace Mann - Lincoln Institute Talented Youth Project, Teachers College, Columbia University, New York 27, N.Y., A. H. Passow, Director.* Founded in 1954, the staff of this project conducts studies in cooperation with public schools on all phases of the education of gifted children. It has been in the forefront of research activity.

3. *The Superior and Talented Student Project of the North Central Association of Colleges and Secondary Schools, 259 East Erie Street, Chicago 11, Ill., J N. Bryan, Director.* Funded by the Carnegie Foundation, this project has worked directly with schools in the Midwest and other areas to provide encouragement and support for exceptional students. Kough (1960) and Shertzer (1960) have further described its activities.

4. *The Southern Regional Project, University of Virginia, Charlottesville, Va., V. S. Ward, Director.* Funded by the Carnegie Foundation, this project represents an effort to reach Southern educators through the inservice training of key personnel in the respective state departments of education. A brief description of this program, as well as the *North Carolina Program* and overviews of activities in eleven other states will be found under Isaacs, Bixler, and Ward (1960).

5. Other state programs: *The California Project,* which spent about $130,000 to match district funds for experiments with nearly a thousand gifted children over a three-year period, has been described by its director, Martinson (1960a,b). Gains for able students were measured both in achievement and personality. Perhaps the most important result was the impetus the program

gave to community planning for the able in areas outside the ones participating in the study.

In New York, local schools have received special support from the State Department of Education for research on able children, much in the manner of NDEA grants.

6. Miscellaneous: Three organizations for the gifted which are less active but interested in research are the following: (a) *The American Association for Gifted Children, 15 Gramercy Park, New York 3, N.Y.;* (b) *The National Association for Gifted Children, 1407 Clinton Springs Avenue, Cincinnati 17, Ohio;* and (c) *The National Council for the Gifted, 700 Prospect Avenue, West Orange, N.J.* Their activities are further described by Kough (1960).

Various learned societies also maintain sections interested in the gifted. These are described at the beginning of Chapter IV.

COMMUNICATION OF RESEARCH

It is highly important when time, money, and effort have been spent to do research, that the results be communicated to as wide an audience as possible. Failure to take this imperative step is a common error, and it deprives others of a knowledge of research effort which might make unnecessary a duplicate effort. It is very common to find school districts going through procedures which have been tried out a dozen times by others.

The researcher, therefore, should see himself as a part of a community wider than just his local district. No matter how small the research question dealt with or how inconclusive or negative the results, the research worker can help everyone by reporting his findings. Perhaps he can do this in mimeograph form, or in a letter to a journal, at a professional meeting, through a newsletter or other publication of the state department of education, or, most ideally, in a journal article. Publication is a friendly service, a professional obligation, and a permanent record for future use. Aside from local and state educational publications, the following journals often accept articles concerning research on the able: *Exceptional Children; Journal of Educational Psychology; Personnel and Guidance Journal; Journal of Counseling Psychology; Gifted Child Quarterly; Journal of Educational Research; Journal of Experimental Education; High School Journal; Education; Phi Delta Kappan.*

A final note on the public acceptance of research is needed. Every educator has seen examples of good research done by school systems and then quietly forgotten. The same old mistakes continue to be made in the same old ways. The contrary phenomenon of rapid change following poor, incomplete, or no research at all is likewise often seen. Why is there so often a lack of cause-and-effect relationship between good research and good practice?

The answer lies in the fact that human attitudes take time to change. Change affects the value systems of those who are subjected to it. It may threaten to destroy some aspect which is seen by the administration, teachers, or public as security producing. This psychological inertia must be taken into account and handled if it is to be overcome.

One way to do this is to involve as many people as possible of those who are to participate in the change in the process of planning and formulating the change, no matter how much time or trouble it takes. In this matter, school administrators and supervisors are key people. The fact that research results are available does not mean that they will be accepted. An atmosphere must be created where it is easy, desirable, and nonthreatening to accept them. While the achievement of this acceptance requires tact, diplomacy, and an understanding of human relations in any instance, it will be much easier in a district where there is a democratically-oriented administration and enough budget allowance so that teachers do not see the program as an extra burden. The applications of research cannot flower without cultivation.

CHAPTER II

Illustrative Research on Individual Characteristics

In the study of academically talented students, the fundamental characteristic used as a basis for identification is thinking ability. This power is seen in such activities as the ability to solve more difficult problems, the ability to perceive more abstruse relationships, the ability to summon more appropriate associations to mind, and the ability to conceptualize with greater ease than the average individual of the same age. It is precisely in this developmental precocity that the early signs of potential adult ability are most easily identified, and so it is here that research on characteristics begins.

DEVELOPMENTAL STUDIES

It is unnecessary in this publication to do more than mention the various growth studies which have added so much to our understanding of the developmental processes of children in general, and the bright child in particular. *The Harvard Growth Study* (Dearborn and Rothney, 1941), *The California Growth Study* (Bayley, 1949), *The Chicago Laboratory School Study* (Freeman and Flory, 1937), *The Brush Foundation Study* (Ebert and Simmons, 1943), and *The Fels Study* (Sontag, Baker, and Nelson, 1958) are major examples. More recent evidence concerning the development of the cognitive processes has been adduced by the research of Inhelder and Piaget (1958).

The case study method of developmental research has not been in vogue recently, although Hildreth (1954) traced the records of three gifted boys over a seven-year period. Developmental aspects of reading abilities have been investigated by Bliesmer (1954) who found that while bright and dull children of the same mental age are comparable in respect to reading rate and word recognition and meaning, the bright younger children are superior in total comprehension and memory for details and relationships.

Probably the most significant example of a developmental and longitudinal study specifically concerned with gifted children has been the Terman *Genetic Studies of Genius*. Instituted in 1922, this ongoing study has followed some 1500 bright boys and girls through school, college, and adulthood to middle life. The latest report (Terman and Oden, 1959) is a 35-year follow-up of the original group. It tells us that more than 85 percent of the total group entered college and that more than 70 percent graduated, a proportion about ten times that of the average population. Over 60 percent of the students continued in graduate work, and the Ph.D. was taken by 14 percent of the men. These men have produced nearly 2000 scientific papers, over 60 books and monographs, at least 230 patents, and over 600 miscellaneous literary productions. Statistically, there is clear evidence that gifted children form a major pool from which outstanding adults are produced.

This research has yielded numerous fascinating side results (for example, the fact that 30 percent of the children of these gifted subjects are also gifted), but one of the more germane results for present purposes is the discovery that the gifted subjects continued to improve their scores on a difficult intelligence test when their mean age was over forty. Evidently, according to Bayley and Oden (1955), in the able at least, mental age continues to rise through middle age. Previous indication of this fact had been adduced from the Owens study (1953) in which a follow-up of 127 World War I college men disclosed a rise of nearly one-half standard deviation in their median Army Alpha scores. Possible alternative explanations for this phenomenon are (a) a possible world-wide rise in intelligence; (b) the results of stimulation and use of mental abilities by able people; and (c) differential behavior of adult mental age for different segments of the adult population.

Two other follow-up studies of the able are those of Chambers and of Gaffney. Chambers (1956), in a 20-year follow-up of three groups of former St. Louis students with IQ's of 135 and above, found that parental background was more important in college going and in later occupational success and community service than a high IQ. Those students who transcended a poor home environment were aided in this by the outside stimulation of a teacher or some other adult individual. Gaffney (1957), in a 10-year follow-up of 153 "top twentieth students," found that 86 percent had attended college and that over half expected to do graduate work.

Longitudinal studies have failed thus far to give a really clear picture of why some highly intellectual students do not reach their adult potential. Terman's side study (1947) of 150-achieving versus 150-nonachieving gifted males hints that the difference is due in part to lacks in family background and in individual character structure, but much more needs to be discovered in this area.

THE STRUCTURE OF INTELLECT

Growth proceeds from the general to the specific. As children grow up, general ability grows into specific talent. Similarly, our concept of intelligence has developed into more specific aspects. It was not many years after the discovery of the general concept of intelligence that Spearman and Vernon in England, and Kelley and Thurstone in this country, began to develop the various group and factor theories of intelligence.

These have now reached fruition in the virtual periodic table of the specific intelligences constructed by Guilford (1959). Guilford sees intelligence as a many-factored thing involving three dimensions: *operations* (cognition, memory, divergent production, convergent production, and evaluation); *contents* (figural, symbolic, semantic, and behavioral); and *products* (units, classes, relations, systems, transformations, and implications). In his schema there are 120 possible factors of which about 70 have been discovered. Guilford's material is an elaboration of the Primary Mental Abilities (number, spatial, memory, verbal comprehension, word fluency, perceptual speed, reasoning) discovered through factor analysis by Thurstone (1941). It is less closely related to Vernon's structure of human abilities (1950) which envisages the factors of intelligence as branching into specific talents from the two major limbs of verbal and numerical abilities, all coming out of a common trunk, much in the manner of a tree. Guilford's efforts go beyond these earlier attempts, however, by providing for as yet undiscovered factors and by emphasizing the importance of the creative and divergent thinking factors which earlier research often overlooked.

The new area of creativity opened up by Guilford's work has been greatly stimulated, and communication of results has been hastened by the definitive Utah Conferences on Identification of Creative Scientific Talent held in 1955 and every odd-numbered year thereafter by the University of Utah, under the direction of Taylor (1955, 1957, 1959). Reports of the conference papers are most useful in bringing together the latest information and research.

Taylor has also given us a picture of the creative individual as unconventional and as resisting the drives toward conformity and the convergent thinking often found in the schools. In this he agrees with Barron (1958) who, in studies of highly creative people, found them more original, less suggestible, and more tolerant of structural disorderliness and the ambiguous. Reviews of research in creativity may be found by Gerry, and others (1957), and Torrance (1959a). Ghiselin (1952) edited *The Creative Process*, in which 38 of the world's greatest innovators analyze the wellsprings of their own creative ability.

A definitive study in the area of creativity of the able is that of Getzels and Jackson (1960). They contrasted the aspects of creativity and conventional intelligence by selecting 28 students with a mean IQ of 150 but below the top fifth in creativity, and 24 students in the top fifth in creativity but below the top fifth in intelligence (mean IQ 127). The creative criterion group was found to be less interested in grades and teachers' opinions, but had out-of-class interests of a wider scope and more of a sense of humor. They showed more imagination in story writing, but were less highly esteemed by teachers. It is generally indicated in the literature that a wider definition of giftedness is needed to help expand school programs which will reach and satisfy these students.

Another pioneer in this area is Torrance, who has been concerned with how creativity may be fostered in the classroom. He first (1959c) tried to see if creativity could be increased in elementary-school children through the following factors: (a) training in principles; (b) motivation; and (c) competition. He found a consistent tendency for the trained subjects to produce more creative responses. Torrance then (1960b) made eight partial replications of the Getzels-Jackson study and found that in six of eight cases the highly creative students achieved as well as the highly gifted ones. There was only about 30 percent overlap between the two groups.

Torrance (1959b), in another study, investigated the relationship between creativity and peer group approval. He found that this relationship began at about the fourth grade (which appears somewhat crucial in the development of creativity). Clear pressure against the most creative child in each work group was found by the end of the sixth grade; in only a quarter of the cases was the most highly creative child seen as having made socially valuable contributions. Children who rated high in both creative and intellectual areas were, however, well liked by others. Teachers preferred the high IQ-low creativity child to children who were high in both creativity and IQ.

Torrance (1959c) also investigated the success with which various intelligence tests could identify high-creativity children. The children were equated on the Iowa Achievement Test and on the Gates Reading Test, but there was a difference of 25.6 IQ points between the two groups. The Wechsler Individual Intelligence Test, given in a school of 150 children, revealed that 70 percent of the top fifth of creative children would not be in the top fifth on the WAIS. In another school with 375 children, the Otis Test missed 73 percent of the top fifth of creatives; similar results were obtained by the California Test of Mental Maturity and the Metropolitan Test. In general, it may be concluded that most intelligence tests will miss about 70 percent of the highly creative children.

Reid, King, and Wickwire (1959) investigated the differences in cognitive and other personality attributes between 24 creative and 24 noncreative seventh-graders as nominated by peer ratings. The creative children were more sociable, more warmhearted, and less anxious. Students from upper-class socioeconomic backgrounds appeared more stable emotionally. Creative lower-class boys were more confident and self-sufficient than noncreative lower-class boys, but no differences were found among upper-class boys. Creative lower-class girls, however, were less confident and secure than noncreative lower-class girls.

It is a little early for implications of this recent research for classroom procedure to be in print. Torrance (1960a) suggests activities using fluency, flexibility, originality, and curiosity. He stresses the following needs: (a) to help children recognize the value of their ideas; (b) to provide activities which give practice or exercise in creative thinking; and (c) to reward creative thought in the classroom.

A symposium on the teacher's role in classroom creativity was chaired by Franklin (1959). Rubin (1960) has put out a useful 100-page pamphlet called *Nurturing Classroom Creativity* for the Ventura County, California, schools. The Educational Testing Service, Princeton, New Jersey, operates a "creativity exchange" under the direction of Dr. Samuel Messick. The exchange serves as a clearinghouse to which findings should be sent and from which information on recent creativity research may be requested.

CULTURAL FACTORS

Various cultural, subcultural, familial, and personal factors interact to determine to what extent potential ability will be translated into commensurate achievement. Some of these influences are fairly uniform throughout the culture; others are specifically related to the mores and expectations of various subgroups, such as class and family.

Culture-Wide Values

It is generally assumed that broad cultural norms help determine the kinds of individual excellence which will be rewarded in a given society as well as the investment such a society is willing to make in nurturing its more talented members. Four such fundamental ethos values which distinguish American culture are the following: (a) belief in democracy; (b) belief in individual initiative; (c) belief in education; and (d) belief in science. The atmosphere which has produced these values has been termed by Weber (1948) as "the Protestant ethic," and by Laski (1948) as "the quintessence of secularized puritanism." Roughly paraphrased, these values result in a belief in man's ability and need to control his own destiny. Self-perfection is seen not only as a desirable goal but also as an inevitable reward for diligence, determination, and intelligent activity. Education and science are seen as the pathways to the good life in this world, just as in former times religion was considered a pathway to the good life in the world to come.

Concomitant with these values is the development of self-reliance in the solutions of the challenges of nature versus superstitious fatalism, and willingness to embrace new ideas, processes, places, and things versus clinging to old ideas, customs, locations, and relatives. The former has resulted in an "entrepreneurlike" willingness to take calculated risks—the "reasonable adventurer" (Heath, 1959)—which is the essential element of capitalistic enterprise or scientific research. The latter has resulted in an ease of mobility and change both for individuals, for ideas, for processes, and for social groups. It has greatly facilitated the "melting-pot" aspect of America (Strodtbeck, 1958).

There is not enough space in this publication, nor is this the place, to comment on the philosophical implications of these value systems. Sociologists have pointed out that the upper middle class in America owes part of its power to the fact that its values are more nearly in line with these culture-wide values than are the values of any other subgroup. It is therefore not surprising that Knapp and Goodrich (1952), and Roe (1953) found that a disproportionally large number of scientists are produced by Protestant middle-class backgrounds and are trained in small liberal arts colleges that mirror these values.

Mindful of the traditional American belief in individual enterprise and the self-made man, we should also take cognizance of recent speculations which suggest a trend toward group conformity. In contrast with the "inner-directed" man of yesterday, Riesman (1950) describes the "other-directed" man of today who has become a prominent figure in American life. The latter, a more self-consciously *social* being, may be forced to inhibit inclinations toward nonconformity even at the expense of some forms of individualized talent.

Getzels (1958) argues that the growing control in America of group consensus over individual behavior represents a marked departure from earlier traditions which encouraged individual aspirations toward personal self-realization. Although emphasis on "group tyranny" appears to be a recent development, its existence is as much rooted in our national heritage as is the Protestant ethic, for, in essence, reverence for the group implies belief in the common man and a fear of the elite, including the elite of personal excellence. As Krutch (1954) pointed out, a dangerous outcome of this tradition is the fact that the common denominator begins to function as a standard of attainment, and instead of encouraging the common man to become uncommon, we regard his commonness as a virtue and reward him for being indistinguishable from his fellows.

Other problems are the impediments which such a belief imposes in the recruitment and stimulation of the kinds of diverse talent needed in our diversified civilization. On the frontier, among generalists, equality is absolute; in our complex society, among specialists, it becomes equality of opportunity.

Another area in which crosscurrents of conflicting cultural values are seen is in public stature versus social acceptance of the talented. On the one hand, there is a great deal of evidence to suggest that those with advanced training achieve better economic success, take greater part in community service, and, in general, enjoy more public honor and prestige than those without such training. At the same time there is a great deal of anti-intellectualism and distrust of intellectuals in general and scientists in particular.

When one realizes that these stereotypes are the ones that can prevent an able youth with a less fortunate environmental background from going on to college, one can see the seriousness of talent wastage that results from such feelings. College going in America has been pointed out as more of a behavior of class than a function of high intelligence. The studies of Cole (1956) and of Stice, and others (1956) found serious loss of talent in the lack of college going among bright high-school seniors. Three major groups which were found not to be contributing their share of college-going people were minority groups, rural youth, and girls.

Mead and Metraux (1957) analyzed responses from 35,000 high-school students as to how they perceived the scientist. Although the official image of the scientist was a positive one, negative verbal stereotypes were invoked when science was considered as a career choice. Science was seen as an honored profession, but the intellectual activity involved was regarded as unrewarding and diverting from normal friendly human relations.

A final paradox in values is the American respect for schooling versus absence of respect for scholarship. American schools differ from those of the Continent in that they encourage all youth to climb the educational ladder as far as they are able. Much larger percentages of secondary and college students are enrolled here than abroad. This high incidence of enrollments, however, does not reflect respect for learning, so much as it promises the realization of the American dream of the good life. Lerner (1957) remarks that the anti-intellectualism in American education results in a de-emphasis on training the mind, in favor of vocational or citizenship training, life adjustment, and the like. In a similar vein, Laski (1948) described scholastic achievement as taking second place to character training, social graces, and practical skills in American educational objectives.

The problems inherent in this approach may be seen in Whyte's analysis (1957) which points out that our social ethic has set the stage for scientists to concentrate on practical applications of previously known ideas rather than on creating new ones. He points out, too, that there is relatively little public support for scientific advancement unless it insures utilitarian gains, even though pure theory and basic research may push back frontiers of knowledge and someday be translated into practical use. Too often the creative thinker is asked to produce new and different scientific wonders with the proviso that they be marketable and profitable. We witness a conquest of nature to satisfy the material and immediate demands of the multitude, rather than an altruistic desire to elevate man's rational understanding of the universe.

The reader will note little citation of research in this section. Studies of artificial means of changing cultural values are needed. Little has been done to find out how youth may be stimulated to a greater concern about or commitment to these desirable ends. One of the few efforts in this direction is the informal account of Brandwein (1955) of his methods of orienting students to a greater interest in science.

Subcultural Influences

Various subcultural influences act differentially on groups and individuals, stimulating some and hindering others in the full fruition of talent. Among these are socioeconomic class status, family background, ethnic and religious affiliation, geographic location, and sex. It appears probable that it is differences in cultural values which cause the effect in each instance. Since more research is available regarding status and family factors than is available in the case of the other causes, these factors will be examined in more detail. However, research on all aspects of subcultural influence is needed.

Status. There is a good deal of research testifying to the fact that the professional and managerial section of the upper middle class produces a disproportionate percentage of able youngsters. Not only did Barbe (1956a) in his survey of the Cleveland gifted youth, and Cole (1956) in his comprehensive analysis of the origins of scientific talent, go on record to this effect, but the National Merit Scholarship Corporation (1956) reported that children of professional and upper-class business families won a majority of its scholarships. In a similar analysis, Bond (1957) has shown that a librarian's son is more than a thousand times more likely to win such a scholarship than is a laborer's son. West (1956) concluded that for blue-collar and farming families, failure to attend college seemed due more to cultural than to economic factors. In a survey of high-school students in an industrial community, Stouffer and Shea (1959) graphically illustrated the supremacy of parental attitudes toward education despite financial limitations. Among students whose parents could not meet even half of the expenses of college, three-quarters planned to attend if their fathers felt it important, while less than one-quarter planned to attend if their fathers felt college to be unimportant.

A number of suggestions have been advanced to explain the large percentages of highly able children found in upper-class environments. The simplest is that since this group's values are nearest those of the culture in general and, therefore, most in line with the objectives of education, these children are able to make an easier adaption to cultural norms, and tests and other means of identification give them distinct advantages. Another explanation is that of Drews (1960) who avers that intelligence and class status are on the rise and that opportunity results in a higher percentage of able children being found here. A third explanation is that of Burt (1959) who concludes that there are appreciable genetic differences in the intelligence levels of various classes with, of course, wide individual variations. Bonsall and Stefflre (1955) reported that when class status of gifted children was controlled, many differences between the able and the average disappeared, thus raising the question of whether the characteristics were not a function of status rather than ability.

While much more research would be useful in this area, it is already evident that the presence of upper socioeconomic status in a gifted child's background is a large advantage, and the lack of it, a large disadvantage. Research is urgently needed, therefore, to find ways by which potentially gifted youngsters from lower-class homes may be more easily identified, and ways in which educational stimulation can substitute for the advantages of social-class background.

Family. It is obvious that the family is the prime influence in developing the child's potential. The various subgroup influences are mediated through the home and are passed along to the child. Recent research has indicated the importance of these family value systems. Strodtbeck (1958) found a positive relationship between egalitarian relations in the home and the son's ability to move toward new loyalties in larger systems without rupturing family controls.

Studies by Stouffer and Shea (1959) showed that parental attitudes influence college attendance more than socioeconomic status. Kahl (1953), in a study of the college aspirations of lower-class boys, found that when the fathers evidenced limited aspirations and were satisfied with the status quo, high-ability boys were less apt to consider college than when the fathers were concerned with their sons' "getting ahead." His results suggested that within a given class stratum the family attitudes and values have great influence on children's aspirations.

An analysis of the nature of some of these familial attitudes and values was developed by Gowan (1960a) in a review of achievement studies. He found that achievement was related to such familial factors as: (a) homes not broken by death, separation, or divorce; (b) higher educational level of parents; (c) consonance of values between parents and children; (d) parents who were concerned or took action regarding the child's progress; and (e) some tension in task demands by parents—"early independence training."

Further information on the intellectual and emotional climate which produces eminence has been adduced by Goertzel (1960), whose study of 77 world figures indicates that children who become outstanding (a) do not like school or teachers; (b) have highly opinionated parents; and (c) are not rebels against parental authority.

Sheldon (1954), in a doctoral thesis investigation of the family background of 28 children of IQ 170 or over, found dominant mothers and background pressures for education and verbal performance. The parents, none of whom were separated or divorced, tended to plan many of the out-of-school activities of the children. Most of the children studied were only children or first-born. Sheldon suggested studying the transmission of pressures from grandparents and implied that the internalization of these pressures by parents may produce an efflorescence in the next generation. Such a hypothesis might well be tested.

Strodtbeck (1958) found somewhat different implications in his study of family interaction in the development of talent. He believes that the position of the father is crucial in producing boys who submit to cultural pressures and achieve much thereby. It is evident that more research is needed on the various factors which interplay in the production of achievement and eminence through familial interaction.

The ability of educational effort to counteract socioeconomic or family limitations in bringing potential talent to fruition is a most important issue. Notice should therefore be taken of endeavors already in progress to stimulate minority group youth to optimum personal development. Plaut (1957) has described the success of the *Southern Project* in identifying gifted Negro youth. The *New York City Junior High School 43 Project*, in which massive amounts of guidance markedly affected talent development in an underprivileged area, has been described by Schreiber (1958) and Wrightstone (1958). More efforts of this kind are needed.

PERSONAL FACTORS

In addition to their intellectual superiority, gifted children seem to have certain personality characteristics which set them apart as a group. Terman (1930) found that, as adolescents, his gifted group continued to average better than the general school population "in practically every personality trait." While some have held that this superiority, shown by test scores, is due merely to a better test-taking attitude, it is possible that their developmental advantage over the generality helps the gifted to a more positive character integration.

At any rate, whether the research is produced by tests, ratings, reactions of the gifted, or general surveys, the investigations of Barbe (1955a), Elicker (1956), Gowan (1956), Lightfoot (1951), and Strang (1956) seem unanimous in suggesting that able students show more positive character traits, are more scholarly, yet more extroversive, and are more inclined toward scientific pursuits, yet take part in more extracurricular activities than the average adolescent.

Although superior learners as a group do not show excessive emotional or social instability, there are suggestions in the literature that the kinds of problems exhibited by able youngsters may be different both in cause and symptom from those of average children. Some of these difficulties are generated by the child's own differences from the norm as he grows up; for one thing, he may become aware of adolescent developmental tasks and other problems of that age range (such as sex, financial worries, death, religious values) at an age when he has the intellectual but not the emotional tools to cope with them. We shall examine these special problems of the gifted along three major dimensions: (a) Social acceptance versus isolation; (b) Academic achievement versus underachievement; and (c) Emotional health versus disturbance.

Social Acceptance vs. Isolation

Despite the advantages his family may have given him and the personality development that has occurred, the gifted child, when he starts school, is at the mercy of whatever atmosphere of social acceptance or rejection he may find among his classmates. Will they relate to him, and will he find among them those with whom he can identify? The importance of this identification suggests that education provisions for the able should facilitate the process. But what is this process? Various research has attempted to supply some answers in this area, but much remains to be done.

As a result of the efforts of M. Williams (1958) and others, it is a well-accepted idea that social approval of the gifted will improve their classroom performance. In general, as Martyn (1957) has shown, acceptance of the gifted is no different from that of others, although this may depend upon community and other local factors. Barrett (1958) and Gallagher (1958) have shown that there appears to be an upper limit, around 150 IQ, for peer acceptance of the gifted. Beyond that level, increasing problems show up. Sheldon (1959) found the same isolation in highly gifted children. More than half of his group over 170 IQ were unpopular with classmates. In an attempt to decide upon the best classroom procedure, Mann (1957) found that heterogeneous class experience did not provide relationships significant enough to be called friendships.

Not only are attitudes toward individual gifted children a problem, but stereotypes in connection with such groups are also a hazard to be considered. Hamilton (1960) found that among parents, teachers, and children, more favorable attitudes toward a gifted child program developed in proportion to their understanding, relationship, and involvement in it. Similar implications for community education and attitudinal change are found in the study of Tannenbaum (1960). Investigating adolescents' attitudes toward brilliant peers, he found that the bright, studious, nonathlete ranked the lowest of all peers described on a variety of traits and on popularity. Studiousness was viewed as a handicap, and brilliance became a handicap when associated with studiousness and lack of athletic prowess.

Similar findings were obtained by Coleman (1960), who concluded that the diversion of energies from intellectual to athletic and social pursuits by the able student in response to peer pressure not only constitutes a loss in preparation time to the most talented individuals but tends to pull persons of rather mediocre ability into intellectual pursuits. Further studies along these lines are needed, especially in schools where conscious efforts have been made to promote the prestige value of extensive study and to de-emphasize the importance of athletics. We need to know more about the reasons why some schools and communities are successful in their attempts to influence the attitudes of their adolescents while others are not. American education can take a meaningful step toward its goal of providing an ideal setting for talent fruition by learning more about adolescent attitudes toward high ability and the way in which such attitudes affect the learning climate of the classroom.

Academic Achievement vs. Underachievement

We have already noted the cultural and familial factors which produce underachievement. The role that personal factors play in this process has perhaps been best demonstrated by Terman's and Oden's careful study (1947) of differences between 150 gifted achievers and 150 gifted underachievers. One of their most spectacular results was the finding that 18 years before the sortings were made, it was possible to distinguish the two groups on character traits alone. The fact that achievers have had more success in developing good work habits, foresightful planning, ego strength, and other desirable personal characteristics, has been noted by many writers. Drews (1957) states that achievers project themselves farther into the future. Strodtbeck (1958) finds them postponing immediate pleasures for future gain. Heath (1959) states that they are oriented to life as a game, not as a struggle. Morgan (1952) notes the development of a sense of responsibility. Terman (1947) specifies their perseverance and desire to excel. Nason (1958) cites individual inspiration to succeed. Gowan (1955) notes good use of time and money, and in (1957) includes dominance, self-confidence, and character integration. Barrett (1957) found a general lack of well-rounded personality associated with underachievement. Haggard's review (1957) of several laboratory school studies made evident the complex interaction between achievement, socialization, and hostility. Further information on hostility in underachievers was given by Shaw and Brown (1957), and by Shaw and Grubb (1958) who found it a characteristic replacement for achievement. Shaw and McCuen (1960) also fixed the onset of underachievement as becoming significant at the third-grade level in boys and at the ninth-grade level in girls.

The relationship between social extroversion and achievement appears complicated. Altus (1948) and others found achievers more introverted, while Gough (1953), Gowan (1955), and Ryan and Davie (1958) found them more extroversive. It is possible that association of achievement with social extroversion depends to a considerable degree on whether the school and community pressures give achievement high prestige. Where academic achievement is seen as sufficiently socially rewarding, social extroverts may become achievers; where it is not, they may continue to be satisfied with "gentlemen's grades."

One of the most useful studies of school procedures to combat underachievement was the *De Witt Clinton High School Study* in New York City as reported by Goldberg and Passow (1958). Underachieving students who improved were found able to (a) identify with a teacher who was consistently interested and supportive; and (b) receive assistance in mastering basic learning skills which they had failed to acquire in the lower grades. Graham (1958), in evaluating programs designed for the underachieving pupil, suggested that staffs examine themselves and their curricular offerings to be sure that they are going halfway to meet the student's problems.

Several doctoral investigations have thrown additional light on the complex nature of underachievement. Nason's study (1958) concluded that the problems of underachievers were complex and that the lack of positive influence was more notable than the presence of negative factors. Sutcliffe (1958), in a questionnaire approach, found underachievement related to (a) lack of participation in activities; (b) retardation in school; (c) lack of guidance and counseling; (d) types of reward and punishment received; and (e) lack of definite educational plans according to the underachievers' own responses. Middleton and Guthrie (1959), in a factor analysis of achievement, found that achievers showed needs for (a) power and approval; (b) resentment and independence; (c) dependence; (d) social status and influence; (e) hostile aggressive denial of tender socialized feelings. Underachievers, on a similar factor analysis, showed needs for (a) pleasures; (b) extroversion; (c) disavowal of social shortcomings; (d) power. A late study by Pierce and Bowman (1960) tested differences in motivation attitudes and values for high and low achievers. Reviews of the literature are available. One review by Gowan (1960b) posits 19 factors of underachievement. A memorandum and bibliography by Bristow (1959b) is highly useful. An earlier review is that of Krumbolz (1957). This area is still in its initial phase and more developments are to be expected.

Emotional Health vs. Disturbance

While Ramaseshan (1957) and others have shown that gifted students have fewer adjustment and emotional problems than the generality, it is true that (a) highly gifted students seem to have more problems of adjustment; and (b) any problems of adjustment which gifted children have may inhibit later creativity of much social value. Gallagher and Crowder (1957) found that of 35 gifted students in regular classes, a third had no emotional trouble, but 40 percent had motivational problems. The placing together of gifted but emotionally disturbed children in the elementary grades has been successful in at least one school system (San Diego) that has tried it. The discovery of peer friendships seems to help. In the adolescent years, however, the results seem different.

The *De Witt Clinton High School Study* (Goldberg and Passow, 1958) found that there were difficulties when underachievers were grouped together, and a counseling study by Broedel, and others (1960) found that difficulties in group counseling of such adolescents ensued. More research is needed here.

Guidance for the gifted has been discussed by Rothney and Koopman (1958) and by Gowan (1960c). Both stress the special problems which the able bring to the counselor, and the counselor's need for special abilities, skills, and information. Some of this information as it pertains to college going is supplied by Daane (1960).

The personality of each academically talented student is the result of forces which derive from his unique individuality, as well as from sociocultural and family interactions with his high cognitive abilities. Out of this complex there emerges a functioning young person, in some respects similar to all other young people, in other respects like his intellectual peers, and, in a few respects, unlike anyone else. Continued, co-ordinated research on his characteristics (such as the ongoing study of Project Talent) can do much to inform educators on how to stimulate and encourage him to the full fruition of his abilities. Only through an understanding of his personality and through the consequent knowledge of how to help him develop, can we truly conserve that most important national resource—our reservoir of talent. Only by knowing and helping the individual can we benefit the group.

CHAPTER III

Illustrative Research on Educational Practice

This chapter constitutes an illustrative rather than a comprehensive discussion of research in educational practice, including administration, curriculum adjustments, and other aspects of the education of the academically talented. While no specially-oriented reader will find all he wants or needs to know on any one of the many educational provisions, it is hoped that the numerous citations will provide guidelines for further study.

GENERAL SURVEYS

Prior to a discussion of specific administrative provisions, it appears appropriate to list certain general surveys.

General surveys of education of gifted children

- Alpren and Hohenstein (1960)
- Applebaum (1959)
- Havighurst and others (1955)
- Jewett and Hull (1954)
- Kough (1960)
- National Education Association, Research Bulletin (1957, 1960)
- Scheppy (1956)
- Witty (1959)

General elementary curriculum practices for the able

- Castallana (1958)
- Martens (1946)
- Otto (1955)

Practices for the academically talented on the secondary level

National Council of Teachers of Mathematics (1957)
National Education Association Project on the Academically Talented Student (1958)

- Science (1959a)
- Mathematics (1959b)
- Social Studies (1960a)
- English (1960b)
- Administration (1960c)
- Foreign Language (1960d)
- Music (1960e)
- Guidance (1961)
- Projected titles in Art and Business Education

Stone and Van Hooft (1958)

Descriptions of local programs (by locality)

Cleveland, Ohio: Hall, T. H. (1956); Barbe (1954)
Dade County (Miami Beach), Florida: West (1958)
Evanston, Illinois: Miller (1957)
Lewis County, New York: Morris (1957)
New York City, New York: Bristow (1959a); Bristow and Fulton (1955); Davis, and others (1960); Goldberg and Passow (1958); Kendrick (1958); Krugman (1960); Wrightstone (1958)
Palo Alto, California: Gunn (1958)
Pittsburgh, Pennsylvania: Pregler (1954)
Portland, Oregon: Williams, C. W. (1959)
Quincy, Illinois: Bowman, and others (1956)
San Diego, California: Hall, G. V. (1958)

ADMINISTRATIVE PROVISIONS

Administrative provisions are subsumed under three headings: ability grouping; acceleration; and other procedures. These practices have been sources of concern over a long period of time. They are controversial, and research findings make little headway against the vested emotionality of educators and laymen alike, in regard to these topics.

Ability Grouping

Recent research on ability grouping generally confirms past findings that the academic achievement of able students in narrower range ability groupings tends to be somewhat greater than in broader range ability groups.

Three rather definitive surveys of grouping practices are those of Passow (1958), Shane (1960), and Tyler (1957). All find widespread acceptance of some varieties of grouping, although they note the many practices subsumed under this title. Other aspects of the learning situation which favor some forms of grouping are discussed by MacLean (1956), Ramey (1956), and Gowan (1955). Barbe (1955b, 1956b), in an evaluation of the Cleveland Major Works Program and other grouping plans, drew favorable conclusions. In addition to the academic aspects of his findings, his evaluation showed better peer relations and better adult life adjustment for the children involved in this study. Bell (1957), in a comparative study of gifted children homogeneously and heterogeneously grouped, found no personality differences, but the homogeneous group was superior in work-study skills. Schwartz (1943) did a very carefully controlled study of 200 matched pairs of able New York City students. The homogeneously grouped students showed greater gains in scholastic and social areas at all levels than did the heterogeneously grouped students. A very recent report containing a good review of the literature is that of J. W. French (1960).

A New York City study by the Horace Mann-Lincoln Institute (1959) involved 40 elementary schools in organizing about 80 fifth-grade classes on the basis of specific grouping patterns which were maintained intact for two years. It was hypothesized that children of all ability levels would fare better when the class range was narrow than when it was broad. While achievement differentials due to grouping did not appear, a broadening of the ability range in the narrow groups did become apparent. One conclusion of the study was that reading range may be a better determinant of general achievement than the "IQ" and, consequently, it may be more desirable to group on reading ability levels. Another finding of the study concerned aspiration levels. When able students were removed from broad range groups, the wished-for status of the remaining students rose. It may be to the advantage of average students to have the more able placed in separate groups.

Drews (1959), in a study of the Lansing, Michigan, schools, investigated the effects of grouping with various ability levels in the ninth grade. A preliminary review of the findings indicated that both teachers and students prefer homogeneous grouping. The teachers reported that they were neither able to prepare adequately for the deviant students in heterogeneous classes nor did they have the time to give them the individual attention desirable.

In Portland, Oregon, (Williams, C. W., 1959) a study of ability grouping in the ninth grade was made to find out what happens when students of various ability levels are grouped homogeneously. There were no statistically significant differences on achievement tests between homogeneously and heterogeneously grouped classes. Teachers of the homogeneously grouped classes felt that these classes were more teachable; that is, student morale was better and students worked harder than in other classrooms.

Miller (1957) has described an Evanston grouping study which found no differences between achievement tests of grouped and ungrouped gifted students, but the special class grouping had enabled the experimental

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subjects to complete and engage in many additional enrichment programs, including the learning of a foreign language and other cultural additions to the regular curriculum.

Mann (1957) found that gifted children prefer other able children as friends, even when there is only partial grouping. Gallagher (1958), on the other hand, reported that he found propinquity a more important factor than intelligence level in determining friendship choices.

In an attempt to test the long-range effects of grouping, Abramson (1960) compared the grade-point averages of several groups of college sophomores from various high schools. The grouping practices of the high schools made no difference in the grade-point averages, but general intelligence of the students was related to them. Comparably able students tended to earn the same grades regardless of the high school they had attended.

Martinson (1960a) has reported in detail on the California three-year study project on programs for gifted children. This consisted of matching control and experimental groups of students of IQ 130 and above at various educational levels and in various kinds of programs. They were measured on academic achievement and social relationships at the end of the program. Table 16 of the study lists five grouping experimental situations, all of which resulted in greater gains on the STEP test than the controls at the 5 percent level of confidence or better. All grouping experiments were significant and two of them had the highest F-ratios of all of the experimental situations. The grouping aspects of this study were part of and used in conjunction with other aspects of the general program.

In criticism of grouping studies it must be said that they are often defective in research technique. Many studies of grouping have used school achievement alone as a criterion measure, with little concern for changes in attitudes. Often the reliability of assessment measures has not been scrutinized. Little attention has been paid to the effect of other children in a school where there are special classes for the able. The concept that it is possible to make a class "homogeneous" by sorting on one variable is no longer tenable. Such procedure may make a class a little less heterogeneous, but there will still be large individual differences, and it is dangerous for the teacher to assume that these differences have been removed. It is probable that grouping is best employed in conjunction with other methods of dealing with the able student.

In summary, we may say that grouping able youngsters together may be a useful administrative device, since it can enable teachers to work with a narrower range of abilities, to devote more time to the able than is possible in a heterogeneous classroom, and to enrich curricular offerings. Furthermore, desirable changes in self-attitudes may occur in grouping, both for the able and the average. There is no evidence to support the notion that grouping has adverse effects on the social or personal attitudes or behavior of children. Nor, on the other hand, does broad range grouping foster greater mutual acceptance among children of various ability levels. Grouping, then, is a facilitator of better learning experiences for bright children, but it does not, *per se*, result in greater achievement in the basic skills or in general content.

Acceleration

Acceleration represents an area where almost all the research points in one direction, while popular fancy points in another. Discussion of acceleration usually arouses emotional response and the citing of some example of how it has ruined some child's life. The research testimony as to the advantages of acceleration is weighty, consistent, and continuous over several decades. It is approved by authorities such as Terman (1954) and Pressey (1954), and by reviewers of research such as Gowan (1958), Shannon (1957), Tyler (1957), and Wilson (1951). Tyler notes that "evidence continues to pile up that the effects of acceleration are favorable rather than the reverse." Shannon states that it is hard to find a single research study which shows acceleration to be harmful to any group of students.

Certainly caution needs to be exercised in selecting candidates for accelerated programs. It would be foolhardy to disregard a child's physical and emotional development in moving him into a grade beyond his years. Whenever possible, it is better to move groups of children through at an accelerated pace than it is to move a single child (Justman, 1954). But in the small school where there are few exceptionally able children, and curricular adjustments within broad range classes are difficult to achieve, acceleration can raise the level of challenge and stimulation for the superior child.

To the extent that getting youngsters out of school earlier is in itself a worthwhile end, acceleration is certainly both a desirable and practical method. And there is evidence to support the contention that able students should complete their baccalaureate at an earlier age than is now the case. Lehman (1953) has shown that for some fields of endeavor, especially science and mathematics, greatest productivity is achieved during the twenties. Such findings tend to stress the importance of Terman's contention that the gifted should be prepared for college by 16 and enter graduate school by 21, so as to make possible maximum freedom for original work during the third decade of life.

Available research does not support the contention that acceleration is the best method for dealing with the able. This would seem to be an admission that the existing program of the school is not flexible enough to deal with the highly deviant individual. The amount of acceleration is also not established, although accelerating more than two years is an uncommon practice. It is probable that acceleration should *not* take place with youngsters whose IQ is below 130. The optimum time for acceleration is also in doubt, but three definite periods for it have developed in the American school system: (a) early entrance; (b) grade or junior high school acceleration; (c) advanced placement or acceleration into college. Each will be considered in turn.

Early entrance. Early entrance for gifted children has a great deal to recommend it, both in theory and practice. It avoids breaking up any established peer group relationships and results in continual academic challenge to the child instead of the boredom of lockstep. Birch (1954) and McCandless (1957) both recommend it after analysis of practice. Hobson (1956) describes the long established Brookline plan which has resulted in better grades and adjustment all through school for the early entrants. Worcester (1959), on the basis of Nebraska studies, reports equally good results for these youngsters. It is evident that this plan should receive wider acceptance.

Grade or junior high school acceleration. Justman's study of acceleration during the junior high school years is the best in this area. He did a carefully controlled New York City experiment (1953, 1954) on the subject. He found that accelerated students, especially when grouped, can make faster progress without sacrifice of achievement or socal relationships. Bonsall (1955), studying the reactions of gifted seniors, reported that they felt the advantages of acceleration outweighed its disadvantages.

Advanced placement or acceleration into college. Acceleration in the senior high school can be in terms of taking more courses than are needed to graduate, thus building up advanced college credit. For various reasons this method of advanced placement appears culturally and economically more acceptable than early entrance to college, since college usually involves leaving home.

Despite the widespread acceptance of advanced placement, it offers some difficulties, as noted by Bragdon (1960). Other college plans such as that at the University of Buffalo are detailed by Barnette (1957). The acceleration of able students in college has been described favorably by Bledsoe (1954). In general, there appears to be no level where acceleration is not possible.

While acceleration is somewhat of a stopgap and is best used in conjunction with other methods, it probably is not yet used extensively enough with the top 1 percent of the student population. There is certainly nothing in research today which would gainsay Terman's (1954) recommendation that acceleration of no less than one year and probably no more than two is a most satisfactory procedure for bright youngsters.

Other Procedures

Certain examples of other administrative procedures (often involving enrichment) are detailed here because they are either representative or suggestive in content. They represent curriculum adaptations made in the light of community needs, values, and conditions.

Seminar for rural youth. A seminar for able rural youth in Lewis County, N.Y. has been described by Morris (1957). Twenty-five juniors and seniors from six rural high schools are brought together one afternoon a week for enrichment in literature, music, art, and drama. Seminar members seem to have grown in self-expression and in critical thinking. Compared with students of past years, an increased number have gone on to college.

Evening science seminar. Haubrich (1958) reports a plan of evening science seminars in which community scientific personnel work with small groups or individual students. Such a plan allows opportunities for original research, so often lacking in school programs. A modification of this plan, in effect in Dade County, Fla., allowed selected students to complete their regular program two hours earlier and to spend afternoons working in local laboratories in the community.

Identification and orientation in science. Brandwein (1955) has described the program of identification and orientation in science in the Forest Hills High School in New York. It is impossible to describe the ramifications of this program of curriculum guidance in a brief space, but it both identifies those gifted in science and provides for their creative and intellectual stimulation and commitment to scientific pursuits.

A residential summer-school program. A residential summer-school program for elementary gifted children has been established at Western Carolina College, Cullowhee, N.C., under the direction of Killian. Enrichment in science, literature, mathematics, and the arts is provided. While similar in scope to many optional classes for gifted children in the summertime, this one has the advantage of residence facilities, and camping and other out-of-door opportunities.

A research and guidance laboratory. A research and guidance laboratory for superior students at the secondary level has been set up at the University of Wisconsin, Madison, Wis., by Rothney and others. Primarily designed to help public-school gifted students, it conducts longitudinal research, working with teachers, parents, and individual students on matters of guidance.

COURSE CONTENT AND METHOD

No matter how adequately a school may handle the problems of grouping, grade placement, or even guidance, the major question in educating talented youngsters still remains unanswered: How should the actual course content and teaching method be differentiated for these students? The glib answer is "Enrich the curriculum." But the meaning of enrichment remains undetermined. Does it mean accelerated coverage of a standard course followed by advanced content, such as a speed-up in high-school mathematics which results in the student's taking calculus in the senior year? Does it mean digging more deeply or extensively into selected areas by studying, for example, original documents of some historical period? Does it mean increased independent and creative work in some field of individual interest? Perhaps the word itself is a misnomer; perhaps what is needed is not an embellishment of existing course content but new and different content. Despite the plethora of promising practices suggested by and for teachers, this question remains unanswered.

Experimentation with course content is under way in a number of areas, especially in mathematics and science. Not only have new programs in these areas for secondary schools been proposed by the Commission of Mathematics and by the Physical Sciences Study Committee, but new teaching methods such as those at the University of Illinois Campus School are being explored. Teachers are being taught these new approaches at the same time, many of them in the summer institutes of the National Science Foundation.

The academically talented child is distinguished from other youngsters by the nature and scope of his intellectual ability. Unless this difference has some functional connection with differences in learning, there is no justification for doing anything with academically talented children that any good classroom teacher would not do with all children. If these differences have functional learning consequences, education is shirking its responsibilities unless it adapts curriculum to take advantage of them.

It is our responsibility to discover what these differences are so that we will know *why* to do things as well as *how* to do them. Curriculum experts have devoted too little time to the adaptations necessitated by the intellectual deviate, and those interested in high ability have tended to devote too little time to curriculum research. It is time that the two joined forces and remedied the situation.

CHAPTER IV

The Status and Needs of Research

Research on the academically talented student has increased greatly in the last few years. Current interest in this area has been strengthened by strong public demand due to the needs of government and industry.

STATUS

This interest has been manifested in the increased attention paid by foundations to the subject (e.g., Rockefeller Reports, Carnegie grants, etc.) and by the facilitation of contract research by the government through NDEA and the Cooperative Research Act.

As previously indicated, there have also been first attempts at co-ordination and communication. The National Education Association Project on the Academically Talented Student, of which this publication is a part, is an example. Other Carnegie-sponsored projects, such as the North Central Project or the Southern Regional Project also attempt types of co-ordination and communication in different areas. Efforts of the American Psychological Association through the Division of School Psychologists, of the Council for Exceptional Children through the Division of Educators of Gifted Children, and of the American Personnel and Guidance Association through a subsidiary, have also assisted in giving co-ordination to research efforts. The communication of results has been spurred by numerous publication media, and by a spate of articles and books.

It is appropriate to mention some of these early efforts at co-ordination at this time. Co-ordination of research effort has two facets: a statement of needed research, or recommendations for such research, and a review of past research, or a critique of the present state of research.

One of the first attempts at stating research needs was made by an American Psychological Association Division 16 Committee (O'Shea, 1954) which located 11 areas of needed research—administration, adaptations, underachievement, the teacher, careers, personal relationships, special frustrations, special satisfactions, undesirable traits, status, and special developmental needs.

Gowan (1958) reviewed what had been done in the previous four years to satisfy these needs. Newland (1953) summarized research on the able, and discussed directions research was taking (1955) and the implications of such research (1959).

Abraham (1959) pointed out the following problem areas in need of activity: (a) need to agree on semantics and definitions; (b) more precise forms of identification to prevent talent wastage; (c) stronger attitudes on the part of the public; (d) more respect for nonconformity; (e) more research; and (f) better mental health on the part of teachers and parents.

The reviews of Goldberg (1958), Tyler (1957), and, most recently, of Fliegler and Bish (1959), and Carter (1960) should also be mentioned.

There are many research aids. The National Society for the Study of Education (1958) in its 57th Yearbook, Part II, has a volume on *Education for the Gifted* which contains chapters by various authorities. J. L. French (1959) compiled *Educating the Gifted: A Book of Readings,* which brings together much research on the subject. *Practical Programs for the Gifted* by Kough (1960) contains information to be found nowhere else about consultants and organizations involved in research. Sister Josephina (1960) surveys research in the area of the able and reading, with 20 citations. Pegnato and Birch (1959) wrote a definitive article on identification. Passow, and others (1960) have put out a guide for rating provisions for the gifted which is useful for evaluation. Gowan (1960b), in a status study, suggests that we must restate research for its various audiences, and notes that teachers, administrators, and specialists need different restatements of research for their particular needs. For a bibliography of research on the academically talented, the reader is referred to the next publication in this series. The other National Education Association Project pamphlets have already been mentioned.

RESEARCH NEEDS

Research needs may be divided into two areas: (a) needed co-ordination of research; and (b) needed content of research.

Needed Co-ordination of Research

Fliegler and Bish (1959) listed the following co-ordination needs:

1. Greater concern with curriculum content based upon the conceptual level of the gifted
2. Expansion of the previously narrow interpretation of giftedness through efforts to measure special abilities and creativity
3. Increased acceptability of some forms of acceleration as administrative procedures
4. Development and expansion of college and university programs at both undergraduate and graduate levels for teachers specifically trained to work with the gifted, and special programs for the retraining of teachers in science and mathematics
5. Sponsorship of comprehensive experimentation by the U.S. Office of Education and such organizations as Ford and Carnegie Foundations, as well

as intensification of research activities among local schools and doctoral candidates

6. Recognition of and determination to realize the underdeveloped human resource potential among members of the lower socioeconomic groups, Negroes, and women
7. Direct action by state and national governments through distribution of funds for program development and scholarships
8. Concern with special programs at the local level which have a variety of approaches but substantially represent an interest in the intellectual as well as the social needs of the gifted.

Needed Content of Research

In the area of content needs, the following topics are suggested:

Identification. A fundamental need exists for the definition of terms to describe the many varieties of ability present in society, including the newer concepts of creativity and divergent thinking, as well as the older concepts of intelligence. In its valid meaning, identification is *comprehensive* and *continuous*. *Comprehensive* means that it identifies *all* able children (and much more must be found out about the effectiveness with which various tests accomplish this identification). *Continuous* refers to the phenomenon of change in ability with age, and the problems connected with it. This approach to the issues of identification raises a wide variety of specifics such as the following:

1. How to identify: (a) the many cognitive processes of ability, and the understanding of how they develop throughout the early years; and (b) the slowly clarifying category of noncognitive abilities, such as value judgments, social perception, motivation, perseverance, and others.

2. The important factors in the environment of children which tend to accept talent favorably or unfavorably (thereby influencing children), and in what manner they do so.
3. Techniques such as guidelines and other devices to help teachers identify unusual qualities in their pupils—including the use of cumulative records, work samples, descriptive statements, and the like.

Learning and teaching. While in many respects the academically talented learn in ways quite similar to those of more ordinary children, the concept of giftedness suggests the probability that in some respects the able child may make use of unusual learning processes. It is the task of education to determine the nature of these differences and to exploit them by appropriate teaching and curriculum modifications.

1. Study is needed concerning specifics of the learning processes of the academically talented, such as conceptualization, problem solving, creativity, attitudes of peers and parents, and similar problems.
2. Curricular offerings need examinations in all of the major areas. The development of new curriculum materials is of special importance. Other questions have to do with homework, effects of the total school program, cocurricular activities, and orientation to choice of a career through curriculum guidance.
3. Questions relating to specific teaching procedures need study. Among these questions are the following: nonlesson prescriptions as compared with detailed lesson assignments; relatively flexible programs compared with rigid ones; appropriate procedures for the development of skills (such as increasing reading speed for the able); the results of richly varied materials, equipment, and other resources; competitive as compared with cooperative learning activities, and others.

4. Class management and administrative devices need study. Pertinent topics are class size for optimum growth, various criteria of grouping, rate of progress through school and through courses, and the relation of these adjustments to community composition and school size.

With new and expanded content, it is essential that teaching be economical. This means that research will have to inform us as to what basic skills are commensurate with the learning rate to be expected in the able. At what conceptual levels should particular content be presented to assure maximum learning, and at what rate should it be presented?

Guidance. Many questions in the guidance of the academically talented are unanswered. Among these are the following:

1. How can the percent of academically talented students going on to college be increased?
2. How can guidance services be of more effective help to underachievers? To emotionally disturbed youth?
3. What special guidance problems do gifted children have? What special services do they require?
4. How may the guidance services operate to increase scholastic morale of academically talented youth?
5. What disposition of the interest and energies of parents will assist in the optimal development of their gifted children?
6. What guidance services may be developed to assist the developing capacities of upwardly mobile academically talented youth from homes of low socioeconomic status?
7. How may guidance services help in developing the specialized interests which go with certain professional career choices?
8. How may guidance services be of optimal help in the solution of socialization and other develop-

mental tasks which the able child may encounter early or under less than ideal conditions?

9. How may guidance help gifted children make wise occupational and college choices in the face of many alternatives?
10. How may guidance services provide worthy and intellectual adult model figures for able youth?

Preparation of teachers. The key to the education of gifted children is the competence of the teachers assigned to them. Research, however, has scarcely touched fundamental problems of teacher preparation needed to serve the needs of able children. Studies are needed in every aspect of the situation.

Initial research might well survey what is being done to train students to teach academically talented children. Studies need to be done in the following areas: content matter on the gifted, in professional education courses; sequence of learnings; provision for field experience with gifted children; and the effects of the psychology of learning on the education of the able. Attitudes of college staffs relative to the gifted also need study.

Information should be gathered about desirable qualifications and competencies of those who are to teach academically talented children, including personal and cultural factors, intelligence and scholarship levels, and specific differential teaching skills. In teacher education, the fundamental question is whether the gifted child should have a teacher who is as gifted as he. Can just any teacher properly instruct a gifted child? If the superior child is to explore new fields of thought or probe at a more difficult level, does he need a more stimulating and challenging teacher who can guide him and understand his abstraction level? Pertinent questions arise:

1. How do the role requirements of the teacher of the academically talented compare with the role requirements of the teacher of other pupils?

2. Do different types of administrative arrangements, such as classroom enrichment, acceleration, and grouping require different kinds of teachers?
3. What is the relationship of the teacher's academic competence, personableness, power to inspire, and values to success in teaching the able?
4. How should the teacher of the academically talented be evaluated?
5. What are characteristics of stimulating, creative teachers?
6. What kind of training is needed to prepare teachers to educate academically talented children?

Research in this problem is not easy. The research design should include the following: (a) multivariate measures of achievement or learning by pupils; (b) multivariate measures of the teacher; and (c) controlled situations in which these two sets of variables can be measured and their relationship established.

Evaluative and experimental studies should be made to appraise the effects of special provisions on preservice teachers and to compare the results of different procedures. Some of these specifics might be the following: (a) concentrated units or courses on the education of the able versus scattered treatment in the present training courses; (b) structuring courses to focus learning on varied individual needs rather than on group problems; (c) effects of early field-work experience with gifted children in undergraduate education programs; and (d) the place and contribution of the literature on the gifted in programs to prepare teachers.

Achievement and talent conservation. Little is known at the present time about the distribution of talent in society. Large-scale studies, now and in the future, are needed to describe accurately the distribution of talent by socioeconomic status. Such normative data would help determine the talent pools most likely to yield rich harvests, as well as helping to determine many other procedures used to deal with the able. Particularly needed is research which seeks to validate, while holding status constant, earlier findings concerning the physical and emotional characteristics of the gifted. Research is also needed to assess the impact of recent emphases on careers in science on the vocational choices of members of lower status groups.

Much more needs to be known about the ability of the school to counteract socioeconomic limitations in talent fulfillment. Can the school operate as a potent force in helping talented students to overcome class limitations where they exist? What kinds of programs best facilitate this objective?

The *Southern Project* of the National Scholarship Service and the *Junior High School 43 Project* of the New York City Schools have both been very successful in motivating Negro youth to college attendance. At what other levels and conditions are such programs effective? What types of programs are most effective? How does the outlay of guidance personnel in a given project compare with the yield from it? What types of counselors are particularly effective in such programs? These and other questions have been opened up for investigation by this research.

It has been pointed out that married women in our present society are generally free to return to work within 15 years after they marry. If a talented woman's education has been directed only toward her role as a wife and mother, she will either have to be retrained in middle life or go to work at a level below her ability. Research is required to develop procedures for guiding women to occupational competencies commensurate with their talents. Much more also needs to be known about the working mother as an effective parent. Does a mother's involvement in a career contribute to underachievement or other personal problems in children? Should talented women be counseled into occupations which will enable them to function on a part-time basis during the child-rearing years?

Effects of value systems. More needs to be discovered about the extent to which the so-called "Protestant ethic" stimulates the fruition of academic and creative talent in America. Or is the impetus for this way of viewing life—as perfectable through man's efforts in education and science—more related to the value system of the upper middle class than to any religious or ethnic background?

Basic motives underlying the desire for self-perfection through academic attainment may reveal much about the end product sought by the highly ambitious student. Knowledge is power, but power can be used in many ways.

An allied question is how pressures toward conformity affect the development of individual excellence. To assume merely that the "other-directed" individual is forced to mask his talents in order to remain in rapport with his group may, upon close examination, turn out to be an oversimplification. It may be found that such an individual is more sensitive to the concerns of his fellows, and is, therefore, automatically bent in the direction of dedicating his abilities into channels which society sees as socially valuable.

There is no doubt about the need for research on the effects of pervasive value systems upon popular beliefs concerning the training of the academically talented. Without such research, schools are forced to rely on educated guesses.

Adolescents' attitudes toward creative and academic activity. A great deal of research is needed to reveal how adolescents view high-level creative and academic activity. The display of some kinds of talents may be more acceptable to high-school students than are other talents. The study of negative stereotypes ascribed to the talented is also a fertile field. What community pressures and values cause the apparently wide differences in attitude toward academic brilliance? When the adolescent evaluates the hypothetical brilliant student, is he reacting to his personality, his brilliant mind, or to other characteristics he projects into the situation? What is the source of the ambivalence with which the adolescent sees the academically talented student?

Finally, there is need for experimentation with various school programs designed to elevate students' regard for academic and creative endeavor and for talented peers. Replication of the Tannenbaum study in schools where conscious efforts for the talented have been made may reveal that some schools are much more successful than others in influencing the attitudes and values of their students. American education can make a real advance toward its goal of providing an ideal setting for talent fruition by learning more about what affects adolescent attitudes toward high ability, and how such attitudes in turn affect the learning climate of the classroom.

To what degree do talented students themselves conform to adolescent attitudes toward high ability and the highly able? Are these adjustments made at the sacrifice of creativity or productiveness? Is social choice a sign of genuine friendship or merely respect for a status figure? Most studies between intelligence and social acceptance come from the grades. Research is needed about their relationship in high school with various types of community values.

Emotional stability and creative and intellectual productivity. Admitting that high intelligence and high emotional stability were found among Terman's longitudinal group, there is still some question as to whether those who eventually rise to creative and intellectual productivity show the emotional stability found in Terman's group. Or, are these highly productive people more like the oyster which requires a grain of sand to make the pearl? A great deal more needs to be learned about the developmental dynamics of the conversion of high potential for school-related tasks, as measured by the IQ, into outstanding creative performance in the arts, sciences, and humanities.

A great deal more needs to be learned about the role of anxiety in determining the direction and kind of talent development. Despite a great deal of theorizing and speculation on the relationship between irrational neurotic drive and high-level productivity, there is to date no clear understanding of the role of anxiety in the development of productive talent. Freud viewed high-level creative effort as sublimation of libidinal forces, or as a more constructive channeling of basic anxiety. Others have said that only when an individual is beset by a certain degree of anxiety will he be motivated toward productive performance. On the other hand, it has been demonstrated that large amounts of anxiety act as a disorganizing force.

Is there then an optimum degree of anxiety which will motivate productive behavior among gifted individuals? Or is productivity related to the individual's ability to direct his energies into constructive channels? The apparent contradictions between the observed stability of highly able youngsters and the reported instability associated with highly productive adults need clarification.

Individual variations among the able. Much more needs to be learned about individual difference in timing for developmental tasks among the able. For example, how does organismic age affect the need of the bright child to pass from a parental atmosphere of permissiveness and lack of task demand to one stressing independency training and requiring productivity for approval. Until more is known about the nature of achievement and individual variations in performance and personality patterns of development, school provisions for motivating high-level achievement can be, at best, a hit-or-miss affair.

Investigations such as those undertaken at the De Witt Clinton High School (Goldberg and Passow, 1958) or the research of Pierce and Bowman (1960) suggest a pattern of study which focuses both on socio-familial-psychological determinants of underachievement and on experiments with various administrative, curricular, and guidance techniques for the amelioration of the problem. To the extent that personality and developmental patterns among the able are related to the fruition of talent, research in this area is essential and urgent.

Interaction of cognitive and personality factors. The interaction of cognitive and personality factors in the development of talent has not as yet been adequately explored. The relation of personality factors to the study of how and at what age a person begins to channel his mental energies in a given direction would seem pertinent. Problem-solving styles and strategies may indeed be as strongly influenced by personality as they are by degrees of mental ability.

Available research on the role of interests in talent development further demonstrates gaps in our knowledge. To what extent are occupational choices influenced by unconscious drives, and to what extent are they set by the proximity and close relationship with a challenging partisan in the form of a teacher, friend, or other model figure? Schools would do well to explore the question of whether success breeds interest or interest motivates toward success in a given area.

The whole relationship between cognitive and noncognitive aspects of personality needs clarification. If the cognitive area is as wide as Guilford's research indicates, it may embrace many so-called noncognitive aspects. What implications result for our methods of identification or our teaching practices which emphasize mainly convergent types of thinking? Studies on classroom procedures to reach *all kinds* as well as *all levels* of ability are clearly indicated.

SUMMARY

The past decade has seen the renaissance of interest in the education of academically talented students and a resurgence of research in this area. Furthermore, due to better articulation, co-ordination, communication, and public acceptance, there is less apathy and distrust of research results and less of a cultural lag in putting these results into practice. The new decade, with its tremendous responsibilities and challenges for education, thus starts with distinct advantages over the preceding decades.

It would indeed be hazardous to predict the direction research will take, but we can expect that its pace will further quicken and accelerate. Whether its direction lies in areas of expanded definition, creativity, nonintellective factors of intelligence, programming, differential curriculum, guidance, teaching, or administrative changes, we may be sure that the responsibility for "keeping up" with research will grow heavier all the time. Since it is vital that research in this area should not outrun its public, it is essential that there be increased interest in research, participation on the part of school personnel, and increased and multiplied co-operation and interaction between the public, school personnel, and research agencies. This joint effort is imperative if American education is to face up to its responsibilities of educating the academically talented in the last half of the twentieth century.

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